

Amendment and Response

Applicant: Edward Fuergut et al.

Serial No.: 10/529,565

Filed: October 31, 2005

Docket No.: I431.126.101/FIN481PCT/US

Title: ELECTRONIC COMPONENT AND A PANEL

REMARKS

The following remarks are made in response to the Non-Final Office Action mailed October 2, 2006. Claims 10-25 were rejected. With this Response, claims 10, 11, 13, 15, 19, 20, 21 and 22 have been amended. Claims 10-25 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 112

The Examiner rejected claims 10-25 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. The Examiner indicated that the "active upper face" is downward facing in the figures.

With this response, Applicant has replaced "upper" with "first" and "rear" with "second" so that no confusion will be caused by the relative positioning of these items in the various figures. In view of the above amendments, claims 10-25 are believed to be in form for allowance. Therefore, Applicants respectfully request that rejections to these claims under 35 U.S.C. § 112, second paragraph, be reconsidered, and that the rejections be removed and these claims be allowed.

Claim Objections

The Examiner objected to claim 13 for an incorrect dependency reference. With this Amendment and Response, the dependency has been corrected. As such, claim 13 is now in proper form.

The Examiner objected to claim 20 because of an informality. "Float connectors lacks proper antecedent basis, and is interpreted to mean "flat conductors." With this Amendment and Response, the informality has been corrected. As such, claim 20 is now in proper form.

Claim Rejections under 35 U.S.C. § 102

The Examiner rejected claims 10-25 under 35 U.S.C. § 102(e) as being anticipated by the Hoffman et al. U.S. Patent No. 6,737,750. Applicant respectfully disagrees that the Hoffman

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reference teaches or suggests an electronic component that includes pillar contact pads, first surface areas of a plastic encapsulation and an active first face of the first semiconductor chip *that form an overall first face.*

As amended, independent claim 10 specifies an electronic component including a stack of semiconductor chips and a flat conductor structure. The stack of semiconductor chips has a first semiconductor chip and a stacked second semiconductor chip, the semiconductor chips each having an active first face with contact pads to integrated circuits and having a second face. The flat conductor structure has a chip island, flat conductors surrounding the chip island, and contact pillars arranged on the flat conductors and aligned orthogonally with respect to the flat conductors. The second semiconductor chip is arranged with its second face on the chip island and its contact pads are electrically connected via bonding wire connections to the flat conductors. The first semiconductor chip is surrounded by the contact pillars and is arranged underneath the chip island *such that pillar contact pads of the contact pillars, first face areas of a plastic encapsulation compound that embeds the semiconductor chips, the contact pillars and the flat conductor structure, and the active first face of the first semiconductor chip, form an overall first face.* A wiring layer is arranged on the overall first face and electrically connects the semiconductor chips to one another via wiring lines.

As such, claim 10 (and the other pending claims) includes pillar contact pads, upper surface areas of a plastic encapsulation and active upper face of the first semiconductor chip that form an overall upper face. This feature is not disclosed by the Hoffman reference in either the embodiment of Figure 6A or in the embodiment of Figure 1 -- even if the first die is connected to the circuit patterns in a flip-chip connection.

The formation of this overall first face is a characteristic of compounds that are fabricated using a "universal package-based" method, such as that described, for example, in the last paragraph of page 2 of the specification (and as recited in claim 15). In these methods, the chip or chips are first embedded in the plastic encapsulation so that surfaces of the contact pads form an overall face with a surface of the plastic encapsulation and afterwards a wiring layer is deposited on this face to provide the substrate and outer contact areas.

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Unlike this universal package-based method, conventional methods such as that described in the Hoffman reference, first provide a substrate with a rewiring layer. Then, the chip is mounted on the substrate. Finally, the chip and the upper surface of the substrate are covered with the plastic encapsulation. The Hoffman reference teaches a method including these steps in Figure 15.

In this method of the Hoffman reference, the chip is connected to pre-formed contact areas of the substrate by flip chip contacts, typically in the form of solder balls, which extend between the active face of the chip and the contact areas of the substrate. Consequently, the active surface is positioned *within* the plastic encapsulation rather than forming an overall face with a surface of the plastic encapsulation as in the claimed component.

In this way, even starting from Figure 6a of the Hoffman reference, the skilled person would have to modify the arrangement of the lower chip by replacing a wire bonded chip with a flip-chip. Then, the skilled person would have to omit the flip chip contacts and then position the active surface so as to form an overall face with a surface of the plastic encapsulation. None of these modifications, however, are taught or suggested in the Hoffman reference. The Hoffman reference fails to provide any suggestion that would lead the skilled person to omit the flip chip contacts. Furthermore, the Hoffman reference fails to provide any information as to how a connection could be made between the active surface of the chip and the substrate without providing an intermediately positioned member, that is, flip-chip solder balls, which would result in the active surface being positioned within the plastic encapsulation.

As such, none of the currently pending claims are taught or suggested by the Hoffman reference or the art of record. Therefore, Applicants respectfully request reconsideration and withdrawal of the 35 U.S.C. § 102(e) rejection to claims 10-25, and request allowance of these claims.

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CONCLUSION

In view of the above, Applicant respectfully submits that pending claims 10-25 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 10-25 are respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 50-0471.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

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Any inquiry regarding this Amendment and Response should be directed to Paul P. Kempf at Telephone No. (612) 767-2502, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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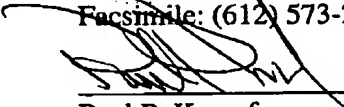
Respectfully submitted,

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CERTIFICATE UNDER 37 C.F.R. 1.8:

The undersigned hereby certifies that this paper or papers, as described herein, are being transmitted via facsimile to Facsimile No. (571) 273-8300 on this 3rd day of January, 2007.

By: Name: Paul P. Kempf